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Assessing psychological work demands with an ICF-oriented concept of psychological capacities

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Abstract

Exploring psychological work demands is the basis for preventive or rehabilitative action, e.g. mental hazard analysis or work adjustment. Can descriptions from employees be useful to describe work demands? The latter requires that the work description is not confounded with an affective judgment on the workplace, e.g. work-anxiety.

Based on an ICF-based work capacity concept which is standard in socio-medical work ability description, we did a study with 124 employees from diverse professions. They were investigated concerning their work demands and their mental health status in a structured interview by a state-licensed socio-medically trained psychotherapist. Additionally, participants filled in a capacity-oriented self-rating questionnaire on their work demands. For discriminant validity purposes, participants filled in the *Short Questionnaire for Work Analysis*, and a questionnaire on work-anxiety.

Results show that different psychological work capacity demands are reported in different professional groups. The work capacity demands self-rating is able to differentiate capacity demands in different professional fields.

Keywords: Mental disorders, Mental health, Sick leave, Work ability, Work demands

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Ein ICF-orientiertes Selbstrating für die Beschreibung psychischer Fähigkeitsanforderungen bei der Arbeit

Zusammenfassung

Psychische Arbeitsanforderungen zu beschreiben ist eine Voraussetzung um präventive oder rehabilitative Maßnahmen in Organisationen umzusetzen, bspw. im Rahmen von betrieblichen Wiedereingliederungen oder Arbeitsplatzanpassungen. Eine wichtige Frage in diesem Kontext ist, auf welche Weise verlässliche Informationen zu Arbeitsanforderungen gewonnen werden können. Im Fall von Selbstberichten muss sichergestellt sein, dass die Arbeitsplatzbeschreibung nicht durch subjektives Befinden und arbeitsplatzbezogene Gefühle, bspw. Ängste, verzerrt wird. Die Arbeitsplatzbeschreibung soll die Tätigkeitsanforderungen beschreiben.

Basierend auf einem ICF-orientierten Fähigkeitskonzept, das in der deutschsprachigen Sozialmedizin ein etabliertes Standardkonzept im Rahmen der Arbeitsfähigkeitsbeschreibung darstellt, wurde eine Untersuchung an 124 Personen verschiedenster Berufsfelder durchgeführt. Im strukturierten Interview durch eine sozialmedizinisch erfahrene Verhaltenstherapeutin wurden der psychische Gesundheitszustand und die Arbeitsplatzbeschreibung erhoben. Darüber hinaus füllten die Probanden einen ICF-basierten Selbstbeurteilungsfragebogen zur fähigkeitsorientierten Arbeitsplatzbeschreibung aus. Zu Validierungszwecken wurde zusätzlich eine Arbeitsbeschreibung mit dem Kurzfragebogen zur Arbeitsanalyse (KFZA) erhoben, sowie die Arbeitsangst. Im Ergebnis zeigt sich, dass von verschiedenen Berufsgruppen unterschiedliche Arbeitsanforderungsprofile berichtet werden. Der Selbstbeurteilungsfragebogen zur fähigkeitsorientierten Arbeitsplatzbeschreibung kann zwischen Arbeitsplatzbeschreibung und Arbeitsangst differenzieren.

Psychologische Arbeitsanforderungen können als Fähigkeitsanforderungen exploriert werden und mittels Selbstauskunftsberichten der Arbeitsplatzinhaber unterstützt werden.

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Schlüsselwörter: Psychische Gesundheit, Psychische Erkrankung, Arbeitsfähigkeit, Arbeitsunfähigkeit, Arbeitsanforderungen

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Assessing psychological work demands with an ICF-oriented concept of psychological capacities

1 Why can a concept of psychological work capacity demands be useful?

With growing importance of mental disorders leading to sick leave at work (Henderson et al. 2011; Knudsen et al., 2012), mental hazard analysis and finding the right person-job-fit is a hot topic in many enterprises and in international research (DRV 2017; Hofmann 2014; Kulik et al. 1987; Bamberg and Mohr 2016; Oldham and Hackman 2010).

A long discussed question thereby is in which wise psychological work demands can be assessed objectively: Can we only rely on observer-ratings or can also descriptions from employees be useful for gaining descriptions of work demands (e.g. Gablenz-Kolakovic et al. 1981; Rau 2010)? The latter requires that the subjective work description is not confounded with an affective judgment on the workplace, e.g. job (dis)satisfaction, or even work-anxiety. In practice, the question is which methods are able to differentiate between wellbeing at work on the one hand, and on the other hand the description of the work as such.

One concept for describing work on a rather objective, descriptive level, is the concept of work capacity demands. Work capacity demands are a concept to describe which psychological capacities are required in a job. Persons with mental health problems are frequently impaired in psychological capacities (Linden et al. 2015) and therefore may encounter problems with work capacity demands resulting in sick leave (Muschalla 2016). Epidemiology studies show consistently over the decades that about 30% of the general population (Baxter et al. 2014; Wittchen et al. 2011) or 14–29% of the working population (Larsen et al. 2010; Stansfeld et al. 2013) suffer from common mental disorders (e.g. anxiety, depression) and related psychosocial impairments. Workplace health prevention thus needs to

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understand concepts and utilize assessments of psychological work demands. Describing psychological work capacity demands is crucial for decisions on work ability, for preventively saving work ability by finding the right person-job-fit (Edwards and van Harrison 1993; French 1973; Kulik et al. 1987) for employees, especially those with mental disorders.

Until now, there is a wide range of instruments which are commonly used in work design and work description (Parker et al. 2017). For purposes of mental hazard analysis and vocational reintegration, or finding the fitting workplace for a coworker, a description of the capacity level of the person and a description of the capacity demands of the work is necessary. An internationally evaluated and socio-medically established instrument for the description of the person´s psychological capacity level is the *Mini-ICF-APP* (Linden et al. 2009, 2015; Balestrieri et al. 2012; Molodynski et al. 2012). It covers 13 core psychological capacity dimensions which are often impaired in persons who suffer from mental health problems. The instrument is based on the relational health concept of the *International Classification of Functioning Disability and Health* ICF (WHO 2001)[1] and is used for comprehensive descriptions of work ability (DRV 2012; SGPP 2012). The *Mini-ICF-APP* offers an observer-rating and a self-rating for describing persons´ psychological (work) *capacity level*. What was missing until now is however a parallel instrument for the description of the work *capacity demands*. Therefore, this present study for the first time uses capacity dimensions from the *Mini-ICF-APP* for the exploration of work capacity demands. Within this present study, an interviewer rating for the description of work capacity demands has been applied (Muschalla 2017), and a parallel work capacity demands self-rating. The results from the investigation with the self-rating are presented in this article.

[1] According to the ICF health concept (WHO 2001), work health (problems) can be understood as an interaction between three aspects: a) body functions/dysfunctions, b) activities/capacities, and c) context. The potential value of the ICF concept for work and organizational psychology is discussed in a current position paper (Vornholt et al. 2018). The Mini-ICF-APP capacity concept (Linden et al. 2015) operationalizes 13 psychological capacities. It reflects the aspect b) of the ICF health concept, i.e. the activities/capacities.

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1.1 How can work capacity demands be operationalized?

There are different approaches how work conditions and work demands can be described. One approach is *describing stressors*, which appear as objective conditions (either perceived as stressful or not) which can lead to a stress reaction (Greif 1991). The job demands resources model offers a flexible model to describe work demands or resources which may be applied to various occupational settings (Bakker and Demerouti 2007). There are also *concepts of work demands in terms of activities or capacities*, such as skill discretion, skill utilization, decision authority, conflicting demands, intense concentration (Karasek et al. 1998) or information processing (e.g. in AET, Rohmert and Landau 1979). A disadvantage of instruments which explore such capacities very detailed may be that they cover many items but not all items are relevant for all workplaces.

When the aim is to avoid mixing work description and subjective perception (like "friendly coworkers" or "hostile supervisor"), then operationalizations of work demands are needed which are descriptive, non-judgmental and not stimulus-bound. Based on many years empirical experience with occupational reintegration cases, the author believes that a useful approach to describe work demands descriptively - even if one cannot investigate the workplace itself - is asking for *work activities* (Oldham and Hackman 2010) or *capacity demands* (Kulik et al. 1987). Work capacity demands are in this present research understood to be neither hindrances nor challenges. They are neither good nor bad. This assumption of a non-stimulus-bound and neutral work demand description is based on the established transactional stress model by Lazarus (1966). Thereby the stressor must not be subjectively perceived. The transactional stress model (Lazarus 1966) argues that the cognitive appraisal of any stimulus as positive, neutral or negative is independent from the stimulus itself. Accordingly, no work capacity demand can be assumed to be a negative or positive, a hindrance, challenge, or resource per se.

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In this present investigation an ICF (WHO 2001) based concept for short description of psychologically important work capacity demands (*Mini-ICF-Work*, Linden et al. 2015; Muschalla 2017) has been applied for the first time. In a structured interview, the employee is asked *what s/he has to do at work* ("work activities" in the sense of Oldham and Hackman 2010) and *which capacities are required for this work*. It is not of interest what s/he thinks of his/her workplace in the sense of an affective judgment. The work capacity demand concept is based on a biopsychosocial-oriented and internationally validated socio-medical concept of work ability description in mental disorders (*Mini-ICF-APP*, Linden et al. 2009, 2010; Molodynski et al. 2012). It covers capacity dimensions which play a major role in the description of (psychological) work ability, e.g. demands for adherence to regulations, planning and structuring of tasks, flexibility, decision and judgment, contacts with other, group integration, assertiveness, mobility, competency, endurance.

1.2 Study aim and questions

This is the first study in which *work capacity demands* are explored based on the same dimensions as *mental work ability* can be described. By using the same definitions of capacities, a way for compatibility of work ability description (*Mini-ICF-APP*, Linden et al. 2009) and work capacity demands descriptions will be opened.

The first question is whether self-ratings of psychological work capacity demands are congruent with an interviewer-rated work description. Therefore the work capacity demands self-rating will be correlated with interviewer (trained socio-medical specialist) rating on work capacity demands.

Secondly, since the work capacity demands description shall be distinguishable from affective judgment of the workplace, the work capacity demands self-rating should be low correlated with a work description instrument which includes affective judgments of work (*Short Questionnaire for Work Analysis*, KFZA, Prümper et al. 1995). The work capacity

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demands self-rating should also be low correlated with work-anxiety (Muschalla and Linden 2009), which is an important indicator of work-related mental ill-health and proneness for sick leave.

2 Methods

2.1 Procedure

Participants were recruited in a medical rehabilitation center in Germany in 2014. All participants were in pre-vocational reintegration stages and in working age (18-65 years). 166 participants underwent a structured interview on mental disorders (*MINI,* Sheehan et al. 1998) and work capacity demands (*Mini-ICF-Work,* Linden et al. 2015; Muschalla 2017). Participants were also asked for their concrete current profession. All interviews have been done by a state-licensed psychological psychotherapist with ten years of experience in socio-medical exploration and work-related mental health issues. Interviewer ratings were determined according to participants' answers during the interview. A trained psychological research assistant was present in 65 out of 166 interviews for independent co-rating.

After the interview, participants were asked to fill in the questionnaire for work capacity demands, a short self-rating questionnaire for work analysis (*Kurzfragebogen zur Arbeitsanalyse, KFZA,* Prümper et al. 1995), and a questionnaire on work-anxiety (*Workplace Phobia Scale, WPS*, Muschalla and Linden 2009).

2.2 Instruments

Mental disorders were assessed with the internationally evaluated and established DSM-IV-based structured diagnostic *Mini International Neuropsychiatric Interview (MINI)* (Sheehan et al. 1998). The interview helps to detect whether a person has a mental disorder or not, and if

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yes which one. Sensitivity of the interview was good (.70) as well as specifity (.85), inter-rater reliability (kappa .07-1.00) and test-retest-reliability (kappa .52-1.00).

The *Short Questionnaire for Work Analysis* (KFZA, Prümper et al. 1995) is a 26-item questionnaire covering established constructs (Table 2) and evaluated items of work description. A part of the items is formulated descriptively (items on interruptions, or physical stressors like climate), and a part is asking for subjective perceptions (perception of social support, or over-taxation). Cronbach´s alpha ranged from .505 – .787 (six dimensions >.700). In this study, the KFZA is used to test the discriminant validity of the *work capacity demand self rating.* The *work capacity demand rating* shall provide a description of the workplace in terms of *capacity demands*. Therefore, there should be low or even zero correlations between most categories of the KFZA and the *work capacity demand self rating*.

The *Mini-ICF-Work* interviewer-rating on work capacity demands (Linden et al. 2015; Muschalla 2017) is adopted from an internationally evaluated short rating for psychological capacity disorders, the *Mini-ICF-APP* (Linden et al. 2009, 2010). The *Mini-ICF-APP* is an instrument for assessing psychological capacity (impairment) of the person, e.g. in order to describe his/her impairment in daily life and work ability. The *Mini-ICF-Work* for the description of *capacity demands of the workplace* is based on *Mini-ICF-APP* capacity dimensions. The *Mini-ICF-Work* has been developed by changing the rating from an impairment rating of the person to a rating of capacity demands of the workplace. The work capacity demands (Table 2) are explored in a half-structured interview. Ratings are from 0 = *this capacity is not needed* to 4 (qualitative) = *this capacity is needed in an extraordinary quality and a deficit in this capacity causes damage or means danger* or 4 (quantitative) = *this capacity is needed all the time during a working day*. A mean score of the qualitative and quantitative rating was calculated for each capacity dimension (Muschalla 2017). This can be interpreted as an overall capacity demand score for the respective dimension.

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The interviewer introduces the definition of the capacity dimension (e.g. group integration), and then the participant is explored whether, to which degree (e.g. on average 4 hours every working day) and in which wise (e.g. leading group discussions and finding consensus solutions for large cost intensive projects) this capacity is required, and what happens in case the job holder has a deficit in this capacity (e.g. the group session aim cannot be fulfilled, this leads to negative feedback from supervisor and customers (=damage), in case it occurs more often, the job holder must be dismissed). In this example, the capacity group integration is extraordinarily required (rating 4), because it is needed several hours every day and deficits in the capacity lead to high damages. Inter-rater reliability, i.e. agreement of the interviewer´s and co-rater´s ratings of work demands, were calculated with Spearman correlations and ranged from $r = .627$ to $r = .914$ on the level of integrated scores (mean of qualitative and quantitative dimension of work demand). The interview is available from the author.

The here used *work capacity demand self rating* covers the same capacity dimensions like the *Mini-ICF-Work*. The self-rating includes ten core items, plus three additional items. Each item is rated from 0 = *do not agree at all* to 4 = *completely agree*. Participants were instructed to refer to their present or (if presently unemployed) to their last workplace. Items are shown in Table 1.

[insert table 1 about here]

The *Workplace Phobia Scale*, WPS (Muschalla and Linden 2009) is an evaluated self-rating scale with 13 items asking for work-related panic and avoidance towards the present or last workplace. Work-anxiety is a main reason for long term sick leaves within mental health problems. Items are rated from 0 = *no anxiety* to 4 = *severe anxiety.* A mean score, reflecting global work anxiety, can be calculated.

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2.3 Participants

One hundred sixty-six patients (52% men), aged *M* = 50.97 (*SD* = 8.7, range 24–64) years, from diverse professional fields (Table 4a, 4b) were investigated with the structured interview, and 124 answered the additional short self-rating questionnaire for work analysis. Comparable to the general population (Wittchen et al. 2011), 29% of this sample had a diagnosis of mental disorder in the *MINI* interview.

3 Results

3.1 Congruence of self-rating and interviewer-rating of work capacity demands

Table 2 shows the pairwise correlations between the interviewer and self-rating of work capacity demands. Seven out of ten pairwise correlations are >.30, indicating moderate relationships (Table 2, diagonal). Moderate or low correlations appear be due to methodological differences, i.e. the interview allows to integrate more information, while the self-rating only asks for one aspect (one item per capacity dimension). Furthermore, the interviewer has the chance to make sure that s/he rates purely work demands and excludes affect aspects which the person may also mention.

[insert table 2 about here]

3.2 Relationships between self-ratings KFZA, work capacity demands, work-anxiety

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Table 3 shows the correlations between the dimensions of job description according to *KFZA* and the dimensions of the work capacity demands self-rating. Most *KFZA* dimensions are independent from the work capacity demand ratings. Correlations above .30 (signaling relevant strength of correlation and that the concepts reflect similar contents) are only found in 18 out of 143 pairwise correlations. The results show that the work capacity demands self-rating provides a level of work description different from the work perception as measured with the *KFZA*.

Furthermore, work-anxiety is more narrow related with the *KFZA*-dimensions (five out eleven correlations >.30) than with the work capacity demands (no correlation >.30). This shows that the *KFZA* partly reflects affective judgments towards work, while the work capacity demands rating does not.

[insert table 3 about here]

3.3 Differences between professional groups

Tables 4a and 4b show how different professional groups describe their work. In the data from the work capacity demands self-rating (Table 4b) differences in capacity demands between the professions become more visible than in the ratings from the *KFZA* (Table 4a). For example, persons working self-employed or in higher leading position report significant higher demand of decision making ($M = 3.67$) than several other professional groups. In manufacturing, technic and production, there are significant lower demands for contacts with others ($M = 1.07$) than in most other professional groups. Office workers need much less physical fitness than may other professions ($M = 0.54$), etc. The unequal distribution of capacity demands in the different professional fields shows that the *work capacity demands self-rating* makes possible to describe differences between professional fields in terms of capacity demands levels.

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In contrast to the work capacity demands, there are no differences in the level of work-anxiety in the different professional groups.

[insert table 4a, 4b about here]

3.4 Comparison of persons with and without mental disorders

There were no differences between patients with and without mental disorders concerning level and profile of self-rated work capacity demands (Table 5). This means the persons with mental disorders perceived and reported similar work capacity demands like the others.
In contrast, persons with mental disorders had higher work-anxiety than the mentally healthy.

[insert table 5 about here]

4 Discussion

4.1 Conceptual and methodological value of work capacity demands

The conceptual new idea in this present study is the introduction of a capacity approach for work demands description according to an internationally evaluated ICF-based instrument (Balestrieri et al. 2012; Linden et al. 2009, 2010; Molodynski et al. 2012). The capacity demand self-ratings showed different profiles in the different professional groups. The work capacity demand dimensions thus allow differential workplace descriptions. Furthermore, work capacity demands were not correlated with work-anxiety, which shows that the capacity demand rating is not confound with this important affective work health aspect.

This present study adds to current knowledge as it offers a new perspective of work demand description, i.e. widely required psychological capacities. This perspective is a useful complement to other work descriptions which use stimulus-oriented items, or ratings of

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perceived job stress (McGonagle et al. 2014; Wang et al. 2008). The capacity demands approach can be applied in both research, and occupational medical and personnel practice, e.g. for purposes of work demands assessment which are necessary in work adjustment or reintegration processes, or person-job-fit questions in personnel planning, or occupational health oriented hazard- and work analysis.

4.2 The role of mental disorders

In persons with mental disorders there were no differences in the degree of self-rated work capacity demands as compared to the mentally healthy persons (Table 5), and that work-anxiety was not confounded with work capacity demands ratings (Table 3). This shows that employees with mental disorders are able to give differentiated reports on work demands and on mental health load (here: work-anxiety) when concretely asked for the one or the other. This is important for mental hazard analysis and respective employee surveys, which require data on work demands (What has the employee to do at the workplace?) apart from mental health aspects (How is the employee feeling at work?).

4.3 Limitations and further research

This is a cross-sectional study. We do not have data on work capacity demands over the course and we cannot make causal interpretations, e.g. which work capacity demands interact with person characteristics (e.g. work-anxiety) in a longitudinal process. Furthermore, we here investigated a group of rehabilitation persons. Further research should continue investigation of work capacity demands in occupational settings. However, rehabilitation persons were chosen here because in such a work-clinical sample it is possible to assess both psychological status as well as work capacity demands. Psychological status (mental health, capacities) is one important aspect for work design and work reintegration for persons on sick leave due to mental health problems. Although the German law (BMJV 2015: ArbSchG) does not consider

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person characteristics in work hazard analysis, it is from empirical experiences senseful to think mental hazard analysis rather relational (instead of purely regarding work conditions). An example may illustrate the relationality of work hazards: For a person with social anxiety whose work requires contacts with clients all working day long, this work may be a “hazard”. For an extraverted person with good capacity in contacts with others, the same work demand may be perfectly fitting (and is thus no hazard for this very person). Thus, future research and practice concerning mental hazard analysis should not search for general hazards in form of certain stimuli, but re-consider the idea of person-job-fit (French 1973; Edwards and van Harrison 1993).

5 Conclusion

Work capacity demands are highly relevant for work ability decisions, mental hazard analysis, work adjustment, and person-job-fit. This study shows that

1. work capacity demands can be explored differentiated in terms of psychological capacity demands in different professional groups.
2. the exploration of work capacity demands can be supported by a self-rating, in case the items ask for work activities and capacities (What do you have to do at work?) and not for affective judgments (How do you like your work?).

Conflict of interest statement

There are no conflicts of interest.

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Ethics approval

The research project was approved by the ethics committee of the University of Potsdam and the German Federal Pension Fund and by the internal review board of the German Federal Pension Fund Agency (concerning were patient information and voluntary participation, written informed consent, data security).

Contribution

The author initiated the study and designed the study. She carried out the diagnostic interviews together with a psychological assistant. The author did the data analysis and wrote the manuscript.

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Tab. 1 Items of the work capacity demand self-rating used in this study: 1-10 refer to the psychological capacity dimensions defined by the Mini-ICF-APP (Linden et al. 2009). 11-13 represent additional and overall capacities.

1. Adherence to regulations: At this workplace I cannot risk any deviation of rules or routines. 2. Structuring and planning of tasks: At this workplace I have to plan and structure my work mainly on my own. 3. Flexibility: At this workplace I must be aware that a work task may suddenly intervene other work and I have to react flexible. 4. Decision making and judgement: At this workplace I have to make decisions which may have consequences for persons or material assets (e.g. clients, coworkers, material, money). 5. Endurance: At this workplace I can hardly take some breaks during my work as I want. 6. Contact with others: In this work I need to do friendly small talk with other persons (e.g. patients or clients). 7. Group integration: In this work, I have to interact and cooperate with several other persons. 8. Assertiveness: In this work I have to defend a certain company´s position or my own position against others. 9. Mobility: This work requires me to be on the road in a car or public transportation means (business trips, long- or frequent short distance drives). 10. Expertise and competency: For this work I need to keep myself up to date in professional knowledge all the time (e.g. by means of vocational training, professional journals).
11. Flexibility in biorhythm: In this work I have a frequently changing working rhythm (e.g. changing shift work, changing day and night shifts). 12. Physical Fitness: For this work, I need to be extremely physically fit (physical strength, endurance, agility). 13. Psychological Fitness: For this work, I need to be extremely psychologically fit (concentration, endurance, cognitive and behavioral flexibility).

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Tab. 2 Correlation of self- and interviewer rating of work capacity demands as assessed with the work capacity demands self-rating and the *Mini-ICF-Work* interviewer rating ($N = 124$). Spearman correlations.

Capacity demands according to *Mini-ICF-Work* interviewer rating	Regulations	Planning	Flexibility	Decision	Endurance	Contact	Assertiveness	Group	Mobility	Competency
Work capacity demands self-rating										
Adherence to regulations	**.136**	-.083	.077	-.084	.181*	.051	.052	.003	-.074	-.032
Structuring and planning of tasks	-.097	**.314****	.090	.182*	.029	.112	.154	.080	-.095	.109
Flexibility	-.010	.255**	**.309****	.166	.149	.161	.285**	.105	-.080	.127
Decision making and judgement	-.080	.412**	.161	**.287****	.095	.207*	.413**	.046	.186*	.353**
Endurance	.213*	-.234**	.245**	-.054	**.439****	.265**	.202*	.136	-.038	-.007
Contact with others	.042	.275**	.404**	.279**	.386**	**.557****	.431**	.196	-.057	.323**
Assertiveness	-.028	.311**	.352**	.321**	.155	.388**	**.401****	.200*	-.044	.298**
Group integration	.099	.104	.186*	.062	.245**	.242**	.254**	**.184***	-.074	.175
Mobility	-.080	.068	.165	.248**	.059	.110	.239**	.012	**.315****	.205*
Expertise and competency	-.032	.278**	.344**	.377**	.227*	.449**	.481**	.390**	.032	**.548****
Flexibility in biorhythm	.116	-.160	.201*	.003	.314**	.172	.107	.017	-.107	-.097
Physical fitness	.132	-.058	.196*	.022	.351**	.216*	.102	.057	-.005	-.002
Psychological fitness	.084	.105	.286**	.097	.306**	.208**	.343**	.150	-.102	.183

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Tab. 3 Work description according to Short Questionnaire for Work Analysis (KFZA) and work capacity demands self-rating. Spearman-Correlation. ($N = 124$)

Short Questionnaire for Work Analysis (KFZA) Work capacity demands self-rating	Scope of Action	Variability	Holistic Job	Social Support	Cooperation	Qualitative Stress	Quantitative Stress	Interruption	Environmental stress	Information and participation	Benefits	Work-Anxiety
Adherence to regulations	-.284**	-.129	-.025	-.067	-.107	.290**	.327**	.200**	.072	.026	.095	.089
Structuring and planning of tasks	.399**	.176	.139	-.138	-.100	-.041	.176	.233*	.183*	.007	.055	.069
Flexibility	.047	.183*	.058	-.079	.071	.270**	.442**	.540**	.258**	.029	.038	.206*
Decision making and judgement	.199*	.210*	.232*	-.047	.168	.214*	.275**	.348**	.227**	.200*	.213*	.035
Endurance	-.432**	-.073	-.063	-.062	.000	.261**	.274**	.239**	.359**	-.076	.002	.263**
Contact with others	.056	.068	.054	-.148	.012	.109	.388**	.414**	.008	.093	.275**	.200
Assertiveness	.324**	.314**	.193*	-.054	.106	.000	.226*	.422**	.093	.124	.323**	.061
Group integration	.018	.151	.138	.135	.256**	.032	.253**	.204*	.168	.071	.136	.011
Mobility	.078	.130	.155	.086	.187*	.209*	.178	.246**	.194*	.177	.182*	.133
Expertise and competency	.167	.304**	.162	.005	.121	.027	.263**	.374**	.039	.120	.393**	.114
Often changing working times	-.148	.045	.027	.017	.028	.161	.206*	.236**	.236**	.024	.122	.018

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(shift work, week-end services)												
Physical fitness	-.095	.155	.218*	-.021	.073	.035	.210*	.096	.261**	.010	.075	.209*
Mental resilience	-.042	.139	.077	-.062	.055	.230*	.482**	.363**	.134	-.009	.073	.129
Work-Anxiety	-.293**	-.098	-.173	-.380**	-.179*	.336**	.480**	.411**	.195*	-.358**	-.266**	

*p<.05, **p<.01

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Tab. 4a Differences in workplace perception (KFZA) of different professional groups

	1	2	3	4	5	6	7	8
Short Questionnaire for Work Analysis (KFZA)	Manufacturing, technic and production (*N* = 43)	Office with client services (*N* = 19)	Supermarket or single market (*N* = 9)	Security, delivery, police office (*N* = 6)	Health services nursing (*N* = 11)	Office without clients, IT, accounting, research (*N* = 13)	Teacher, educator, pre-school teacher (*N* = 16)	Self-employed or higher leading position (*N* = 7)
Scope of action	2.23 (1.06)	2.40 (1.08)	2.21 (1.11)	1.81 (1.43)	1.88 (1.33)	2.56 (0.57)	2.57 (1.03)	3.04 (1.20)
Variability	2.85 (1.08)	3.04 (0.69)	3.04 (1.23)	2.44 (0.89)	3.27 (0.61)	2.79 (0.59)	3.20 (0.85)	3.54 (0.35)
Holistic job	3.02 (1.04)	2.23 (1.39)[8]	3.19 (0.84)	2.25 (1.08)	2.22 (1.10)	2.12 (0.74)[8]	2.59 (1.30)	3.63 (0.69)[2,6]
Social support	3.09 (0.90)	2.63 (1.16)	2.83 (1.01)	3.27 (0.98)	3.03 (1.16)	2.56 (0.73)	3.13 (0.85)	2.69 (1.21)
Cooperation	2.82 (1.00)	2.60 (0.78)	3.41 (0.59)	2.47 (0.57)	2.91 (1.17)	2.49 (0.55)	2.58 (0.95)	2.63 (0.96)
Qualitative stress	1.40 (1.15)	1.45 (1.25)	2.22 (1.42)	0.83 (0.82)	1.50 (1.50)	1.35 (0.94)	1.25 (1.24)	1.56 (1.15)
Quantitative stress	1.90 (1.17)	2.50 (1.30)	3.17 (1.03)	1.58 (0.97)	2.77 (1.13)	2.04 (1.31)	1.84 (1.50)	2.88 (1.06)
Interruption	0.88 (0.93)[2,3]	2.03 (0.94)[1]	2.44 (1.08)[1,4]	0.67 (0.85)[3]	1.64 81.43)	1.62 (1.02)	1.56 (1.28)	2.00 (0.71)
Environmental stress	1.86 (1.21)	1.18 (1.19)	1.94 (1.45)	0.83 (0.75)	0.82 (0.68)	0.81 (0.92)[7]	2.09 (1.14)[6]	1.94 (1.21)
Information and Participation	2.47 (1.12)	2.37 (1.28)	2.68 (0.92)	3.00 (0.70)	2.27 (1.25)	1.96 (0.88)	3.03 (0.96)	2.88 (1.03)
Benefits	1.59 (1.23)	1.84 (1.59)	2.66 (1.56)	1.42 (1.24)	2.14 (0.92)	1.73 (0.90)	2.22 (0.99)	1.86 (1.49)

Equal superscript numbers mark significant difference (.10, 2-tailed) between the respective professional groups

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Tab. 4b Differences in workplace perception (work capacity demands self-rating) of different professional groups

	1	2	3	4	5	6	7	8
Work capacity demands selfrating	Manufacturing, technic and production (N = 43)	Office with client services (N = 19)	Supermarket or single market (N = 9)	Security, delivery, police office (N = 6)	Health services nursing (N = 11)	Office without clients, IT, accounting, research (N = 13)	Teacher, educator, pre-school teacher (N = 16)	Self-employed or higher leading position (N = 7)
Adherence to regulations	1.25 (1.37)	1.44 (1.42)	2.13 (1.73)	2.83 (1.60)	1.82 (1.47)	1.54 (1.13)	1.27 (1.28)	2.22 (1.79)
Structuring and planning of tasks	2.65 (1.44)	3.17 (1.38)	3.00 (1.60)	1.67 (1.86)[8]	2.45 (0.69)	3.08 (0.86)	3.13 (1.20)	3.77 (0.44)[4]
Flexibility	2.59 (1.30)[8]	3.06 (1.26)	3.25 (1.49)	2.17 (1.72)	3.00 (1.09)	2.62 (1.19)	2.63 (1.36)	4.00 (0.00)[1]
Decision making and judgement	1.68 (1.62)[8]	1.89 (1.60)[8]	2.75 (1.58)	3.17 (1.60)	1.46 (1.37)[8]	2.23 (0.83)	2.13 (1.15)	3.67 (0.71)[1,2,8]
Endurance	1.18 (1.41)	1.33 (1.53)	2.67 (1.66)[6]	2.00 (1.79)	2.09 (1.76)	0.54 (0.97)[3,7]	2.38 (1.15)[6]	1.78 (1.64)
Contact with others	1.07 (1.35)[2,3,5,7,8]	2.77 (1.59)[1]	3.75 (0.71)[1,6]	2.50 (1.76)	2.91 (1.51)[1]	1.31 (1.32)[3,7,8]	2.88 (1.63)[1,6]	3.77 (0.44)[1,6]
Assertiveness	1.88 (1.43)[7,8]	2.76 (1.34)	3.25 (1.48)	2.17 (1.83)	2.73 (1.19)	2.42 (1.38)	3.47 (0.83)[1]	3.78 (0.44)[1]
Group integration	3.05 (1.32)	3.50 (1.04)	3.78 (0.44)	3.17 (0.75)	3.55 (1.21)	2.54 (1.27)	3.50 (0.82)	3.55 (0.53)
Mobility	1.05 (1.48)	0.70 (1.19)	2.22 (1.64)	1.83 (2.04)	1.18 (1.54)	0.31 (0.48)	1.44 (1.82)	1.33 (1.80)
Expertise and competency	1.19 (1.29)[3,5,7]	2.33 (1.68)	2.77 (1.56)[1]	2.33 (1.50)	2.82 (1.25)[1]	2.31 (1.32)	2.81 (1.38)[1]	2.67 (1.41)
Flexibility in biorhythm	1.17 (1.58)[3]	0.06 (0.24)[3,4,5,8]	3.50 (1.07)[1,2,7]	2.17 (1.47)[2,6]	2.18 (2.09)[2,8]	0.00 (0.00)[4,5,8]	0.93 (1.62)[3]	2.11 (1.90)[2,6]
Physical fitness	2.80 (1.29)[6]	1.94 (1.39)[3,6,7]	3.79 (0.35)[2,4,6]	1.67 (1.21)[3]	3.27 (1.42)[6]	0.54 (0.78)[1,2,3,5,7,8]	3.27 (1.10)[2,6]	2.89 (1.17)[6]
Psychological fitness	2.93 (1.10)	3.22 (1.31)	4.00 (0.00)	3.00 (1.09)	3.64 (0.92)	2.62 (1.35)	3.40 (1.12)	3.78 (0.44)
Work anxiety	0.38 (0.55)	0.68 (1.14)	1.00 (0.97)	0.32 (0.52)	0.65 (1.04)	0.59 (0.77)	0.71 (0.72)	0.28 (0.32)

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Equal superscript numbers mark significant difference (.10, 2-tailed) between the respective professional groups

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Tab. 5 Self-rated work capacity demands in persons with and without mental disorders (N = 124)

Work capacity demands self-rating	All (N = 124)	Without mental disorder (n = 87) M (SD) % reporting high level of demand, i.e. rating>2.5)	With mental disorder (n = 37) M (SD) % reporting high level of demand, i.e. rating>2.5	Significance of difference between persons with and without mental disorders (t-Test, X^2) p
Adherence to regulations	1.58 (1.45)	1.53 (1.47)	1.67 (1.40)	.613
		27.7%	24.3%	.824
Structuring and planning of tasks	2.88 (1.32)	2.89 (1.39)	2.83 (1.17)	.834
		71.4%	67.6%	.672
Flexibility	2.83 (1.30)	2.79 (1.34)	2.91 (1.19)	.611
		58.8%	59.5%	1.000
Decision making and judgement	2.09 (1.51)	2.12 (1.53)	2.05 (1.49)	.828
		41.7%	37.8%	.841
Endurance	1.57 (1.57)	1.49 (1.52)	1.73 (1.57)	.439
		28.2%	35.1%	.522
Contact with others	2.20 (1.68)	2.07 (1.68)	2.49 (1.68)	.211
		44.7%	56.8%	.242
Assertiveness	2.60 (1.43)	2.48 (1.44)	2.86 (1.37)	.193
		54.2%	60.0%	.685
Group integration	3.26 (1.12)	3.20 (1.16)	3.40 (1.01)	.349
		74.4%	86.5%	.161
Mobility	1.12 (1.53)	1.03 (1.52)	1.32 (1.55)	.338
		19.8%	24.3%	.632
Expertise and competency	2.11 (1.52)	2.08 (1.58)	2.19 (1.37)	.720
		44.2%	37.8%	.555
Flexibility in biorhythm	1.21 (1.67)	1.24 (1.68)	1.16 (1.69)	.820
		26.2%	27.0%	1.000
Physical fitness	2.55 (1.47)	2.45 (1.51)	2.78 (1.36)	.254
		54.8%	64.9%	.325
Psychological fitness	3.20 (1.13)	3.06 (1.20)	3.54 (0.86)	.029
		71.8%	89.2%	.038
Work-Anxiety M (SD)	0.59 (0.82)	0.38 (0.53)	1.29 (1.16)	.000
% High work-anxiety > 2.5	4.8%	0.01%	17.2%	.000

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